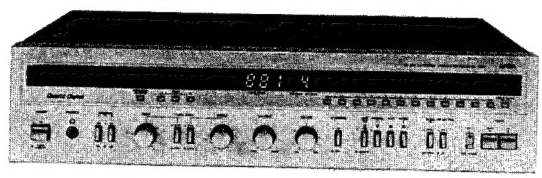
AM/FM STEREO SYNTHESIZER RECEIVER

MODEL NO. AX-7800H,E,K,G

AIWA®

(SERVICE MANUAL)

Code No. 06-780-000-53



Shown above is AX-7800E

DATE OF ISSUE 12/1979

SPECIFICATIONS

≪GENERAL≫

Semiconductors: H,G model
14 ICs, 5 FETs, 77 transistors, 105 diodes, 26 LEDs
E,K model
14 ICs, 5 FETs, 79 transistors, 108 diodes, 27 LEDs

Power source: H model: AC120/220/240V (switchable), 50 – 60 Hz
E model: AC120/220V (switchable), 50 – 60 Hz
K,G model: AC240V 50-60Hz

Power consumption: H model: 150W
E model: 420W
K,G model: 500W

Dimensions: 500(W)x120(H)x440(D) mm

Weight: 10.5kg

≪FM TUNER SECTION≫

Frequency ranges: 87.50~108.05 MHz

Intermediate frequency: 10.7 MHz

Frequency scale accuracy: ±25 kHz (at 88.0,98.0,108.0 MHz)

IHF sensitivity: (THD 3%)
MONO 6 ± 3dB (at 88.0,98.0, 108.0 MHz)
STEREO 13 ± 3 dB (at 88.0,98.0, 108.0 MHz)

50 dB quieting sensitivity:
MONO 10 ± 2 dB (at 88.0,98.0, 108.0 MHz)
STEREO 31 ± 3 dB (at 88.0,98.0, 108.0 MHz)

Image frequency interference ratio: $75\ ^{+25}_{-3}$ dB (at 98.0 MHz)

Intermediate frequency interference ratio: $88\ ^{+10}_{-5}$ dB (at 98.0 MHz)

SN ratio: (Weighted)
MONO $72\ ^{+10}_{-2}$ dB (at 98.0 MHz)
STEREO 68 ± 5 dB (at 98.0 MHz)

Total harmonic distortion: (Input level 60 dB)
MONO Less than 0.15% (at 98.0 MHz)
STEREO Less than 0.28% (at 98.0 MHz)

AM suppression ratio: $55\ ^{+10}_{-5}$ dB (at 98.0 dB)

Muting response: 27 ± 5 dB (at 98.0 dB)

Effective selectivity: $70\ ^{+10}_{-5}$ dB (at 98.0 MHz)

Capture ratio: 2.0 ± 0.5 dB (at 98.0 MHz)

Frequency response: 30 Hz ~ 15 kHz ($0\ ^{+0.8}_{-2.0}$ dB)

Separation: More than 40 dB (at 1 kHz)

Auto scanning level: Less than 35 dB (at 98.0 MHz)

≪AM TUNER SECTION≫

Frequency ranges: MW: 522~1,611 kHz
LW: 137~362 kHz

Intermediate frequency: 450 kHz

Frequency scale accuracy: MW: ±3 kHz (at 603,999,1404 kHz)
LW: ±3 kHz (at 155,200,353 kHz)

Noise limit sensitivity: (S/N 20 dB, bar antenna)
MW: 53 ± 3 dB (at 603 kHz)
52 ± 2 dB (at 999,1404 kHz)
LW: 60 ± 5 dB (at 155 kHz)
58 ± 5 dB (at 200,353 kHz)

Image frequency interference ratio:
H,G model: More than 50 dB (at 999 kHz)
E,K model: MW: More than 42 dB (at 999 kHz)
LW: More than 40 dB (at 200 kHz)

Intermediate frequency interference ratio:
MW: 38 ± 5 dB (at 999 kHz)
LW: More than 30 dB (at 200 kHz)

Selectivity: 30 ± 4 dB

Total harmonic distortion: MW: Less than 1.0% (at 999 kHz)
LW: Less than 1.3% (at 200 kHz)

AGC characteristic: More than 50 dB

SN ratio: MW: More than 40 dB (74 dB input)
LW: More than 36 dB (80 dB input)

Auto scanning level: MW: 50 ± 5 dB
LW: 60 ± 5 dB

≪POWER AMPLIFIER SECTION≫

Power output: (20Hz~20kHz/ THD 0.06%)
H,K,G model: 60W + 60W (8 ohms)
E model: 60W + 60W (4 ohms)

Frequency response: 10 Hz ~ 50 kHz ($0\ ^{+1}_{-3}$ dB)

Damping factor: H,K,G model: More than 25
E model: More than 12.5

Restdual noise: Less than 0.5 mV

≪PRE AMPLIFIER SECTION≫

SN ratio: (Un-weighted, 1 kHz)
PHONO More than 75 dB
AUX, TAPE More than 98 dB

Phono max. Allowance input level: More than 200 mV

RIAA deviation: Less than ±0.5 dB

Tone control:
BASS (100 Hz) ±9±1.5 dB (at 400 Hz turnover frequency)
±6±1.5 dB (at 200 Hz turnover frequency)
TREBLE (10 kHz) ±9±2.0 dB (at 2.5 kHz turnover frequency)
±6±1.5 dB (at 5 kHz turnover frequency)

Loudness response: (With volume at –40 dB)
9.5 ± 1.0 dB (at 100 Hz)
2.5 ± 1.0 dB (at 10 kHz)

Input terminals (sensitivity/impedance):
PHONO: 2.5 mV/Less than 50 kohms
AUX, TAPE: 150 mV/Less than 50 kohms

- Specifications and external appearance are subject to change without notice due to product improvement.

Circuit explanations (refer to the circuit diagram)

1. Front end

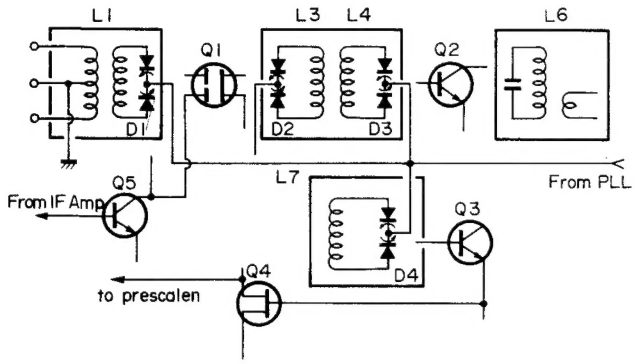


Fig. 1

The input circuit consists of the unbalanced input (75Ω) and the balanced input (300Ω), and M coupling is executed to the single tuned circuit L_1.
The RF amplifier uses the low-noise dual gate MOS FET Q_1, and the second gate consists of the AGC circuit Q_5, which uses the IF amplifier stage interval as drive power source. The tuning circuit between the stages uses double tuning with M coupling. The mixer uses the low-noise transistor Q_2, and the local oscillation signal is put in at the base.
The local oscillation circuit is a deformed Clapp type, and the local oscillation signal is put in to the prescaler from the emitter via the FET Q_4, connected to a cascade with a small feedback amount.
The tuning circuits of each stage use the twin-construction variable-capacity diodes $D_{1,2,3,4}$ with excellent input strength. The control voltage is impressed to the variable-capacity diodes via PLL low-pass filters.

2. IF amplifier circuit

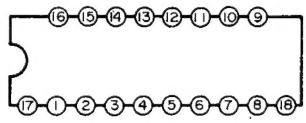


Fig. 2

PIN NO	Contents
1	AM IF Bypass
2	AM IF Output
3	AM AGC
4	AM IF Input
5	Earth
6	FM IF Input DC Feedback
7	FM IF Input DC Feedback
8	FM IF Input
9	FM Signal Output
10	Muting Control Voltage
11	Vcc
12	Refference Voltage
13	FM Detection Input
14	FM Limiter Output
15	AFC Voltage Output
16	FM Det Outpu
17	Muting Input

Table-1

The IF amplifier uses four high-quality ceramic filters for realization of high separation characteristics and low distortion ratio. Transistor amplifiers with a circuit composition so as not to impair the group delay are used between the ceramic filter stages.
Following the filters, an IC consisting of 3 stage direct coupling differential amplifier and quadrature detection circuit with low distortion ratio is used. Group delay and temperature and moisture characteristics have been taken into consideration for the design of the detection transformer.

3. PLL frequency synthesizer

3.1. Outline

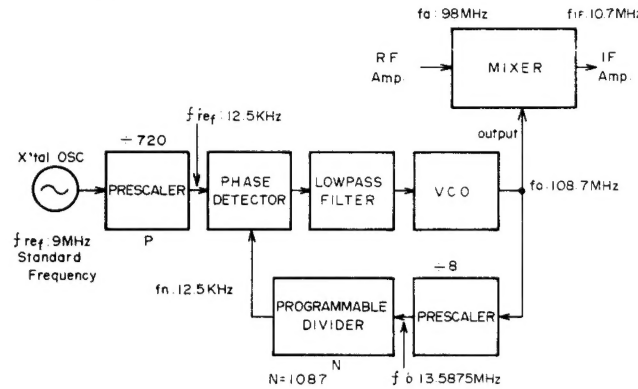


Fig. 3

A PLL (phase locked loop) frequency synthesizer is a circuit which puts out an optional synthesized frequency on the basis of an extremely stable frequency from a reference crystal oscillator.
When for example a frequency of 98 MHz is to be received, the local oscillation frequency (i.e. the VCO output frequency) f'_O for the mixer must be 98 + 10.7 = 108.7 MHz.
AX-7800 lowers this frequency to 1/8 of the frequency by means of a frequency divider called prescaler.
108.7/8 = 13.5875 MHz is the prescaler output frequency f'_O. This is given as input to a programmable divider with optional frequency selection function. On the other hand, the extremely stable reference frequency of 9 MHz from the crystal oscillator is divided by 720 to 12.5 kHz and is given as input to the phase comparator. The phase detector detects the frequency and phase difference between the divided reference frequency f'_{ref} and the output frequency f_n of the frequency divider. Accordingly, the frequency division ratio N of the programmable divider is 13.5875/0.0125 = 1087, and when the frequency division ratio N is preset to 1087, the output frequency f_n of the programmable divider becomes 12.5 kHz, the frequency difference at the phase comparator between f'_{ref} and f_n becomes zero, and the loop is locked.
When the VCO output frequency f_O deviates and f_n becomes a frequency other than 12.5 kHz, then the difference between f'_{ref} and f_n is detected, a feedback voltage for control of the VCO (voltage controlled oscillator) to f_n = 12.5 kHz is applied via the low pass filter, and lock-in occurs after repetition of loop operation until f'_{ref} and f_n coincide. In this way, the AX-7800 tuner with use of a PLL frequency synthesizer locks the reception frequency to the extremely stable frequency of a crystal oscillator, so that accurate, stable reception of high quality is obtained.
Principle diagram for PLL frequency synthesizer

3.2 Synthesizer

A controller IC (IC1 TC9127P) for FM/AM synthesizer with application of a C^2 MOS 4-bit 1-chip microcomputer is used as controller.

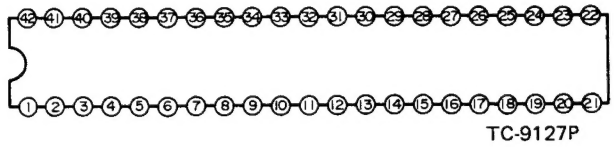


Fig. 4

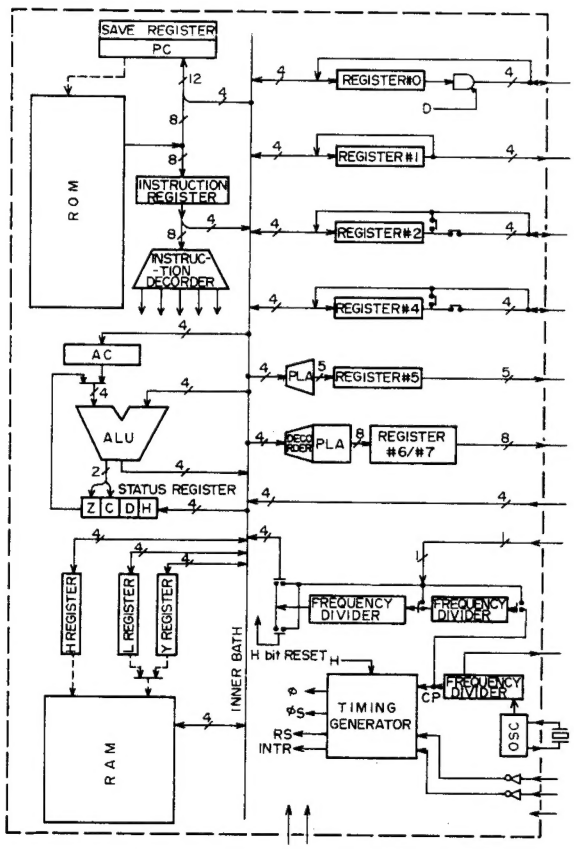


Fig. 5

PIN NO	Symbol	Operation explanation
(1) to (5)	A to D, LOAD	Data and load signal output pins for PLL IC TC-9125P.
(6)	MUT	Muting signal output pin.
(9) to (12)	LW/MW/ FM/SW	Reception band mode output pins. "H" level during reception.
(13) to (16)	LA to LD	Frequency display data output pins.
(17) to (20) (21)	T1 to T5	Display timing digit signal output pins.
(23) to (26)	K1 to K4	Function key matrix input pins
(27) to (28)	XT, $\overline{X7}$	Oscillator input pins for timing signal.

PIN NO	Symbol	Operation explanation
(31)	RESET	Reset input pin which is set to "L" level when power is switched on.
(32)	$\overline{INT}$	Signal that determines the digit signal and scanning speed, etc. is applied to this pin. 250 Hz external oscillation frequency signal is applied with H, E, K, G.
(33)	INH	Inhibit input pin, inhibit state at "L" level.
(34)	−1	−100 kHz control input pin for intermediate frequency fine tuning.
(35)	AUX	Input pin for Japan, U.S., Europe band selection and SW increase.
(36)	S, S	Scan speed selection input pin. 80 msec. at "L" level; 120 msec. at "H" level.
(37)	A-STOP	Stop control signal input pin with auto scanning.
(38) (41)	L1 to L4	Output pins for individual lamp display.
(21) (42)	GND V_{DD}	Power supply voltage pin

Table-2

3.3. PLL circuit

3.3.1. PLL IC

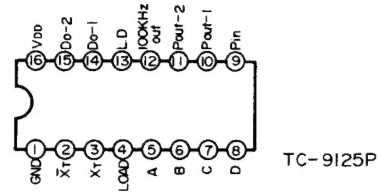


Fig. 6

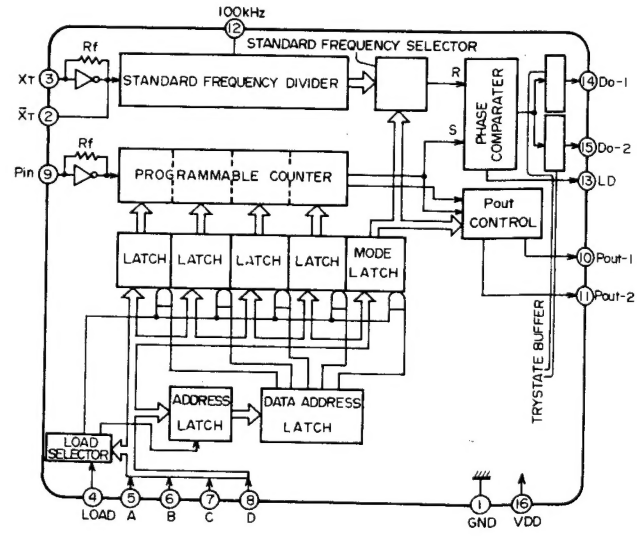


Fig. 7

In combination with TD6102, TC-9125P is a PLL IC with a programmable counter for a multi-band synthesizer, and control is executed with the 5 terminals LOAD and A to D. It has a built-in latch function.

PIN NO	Symbol	Contents
①	GND	
②,③	$\overline{X_T}, X_T$	This is the terminal for reference signal oscillation, and it is connected to the 9 MHz Xtal.
④	LOAD	LOAD command input terminal for data from the controller
⑤ to ⑧	A to D	LOAD command input terminal for data from the controller
⑨	Pin	Input terminal from the programmable divider, connected to the output of TD6102.
⑩	Pout-1	±25 kHz IF offset control signal terminal at the time of FM
⑪	Pout-2	±50 kHz IF offset control signal terminal at the time of FM
⑫	100 kHz out	Output of 100 kHz from frequency division of 9 MHz. Not used for this set.
⑬	L.D	Lock-out detection output terminal. This becomes HIGH (6 – 7.5 V) when digital display and reception frequency are locked.
⑭	D_O-1	PLL, IC output 1. Not used for this set.
⑮	D_O-2	PLL, IC output 2. Connected to the low pass filter input.
⑯	V_{DD}	Power supply terminal.

Table-3

3.3.2. Active low pass filter

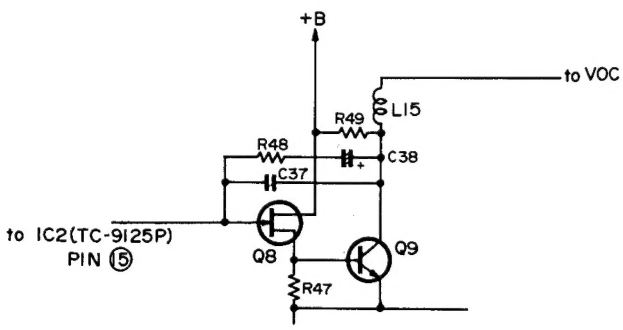


Fig. 8

The low pass filter of the PLL circuit converts the digital output from the phase comparator to analog output voltage, and this output voltage controls the VCO. The circuit composition is an active low pass filter with high input impedance by Darlington connection of Q8 (FET) and Q9 (NPN transistor).

3.3.3. ECL (emitter-collector logic) prescaler

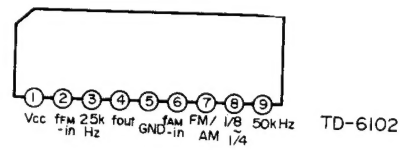


Fig. 9

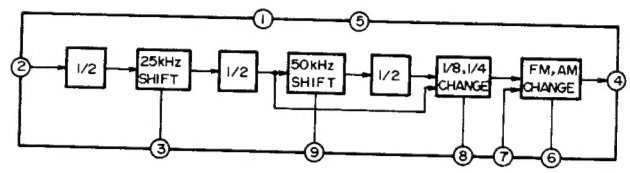


Fig. 10

At the time of FM, 1/8 frequency division function is executed, and at the time of AM, this operates as buffer amplifier for processing of the local oscillation frequencies for each band and leading them to PLL IC TC-9125P.

PIN NO	Symbol	Contents
①	V_{CC}	Power supply terminal (5.5 V impression)
②	$f_{FM\text{-}in}$	Local oscillation frequency input pin
③	25 kHz	25 kHz shift pulse input terminal
④	f_{out}	Output terminal
⑤	GND	Ground terminal
⑥	$f_{AM\text{-}in}$	AM input terminal
⑦	FM/AM	Band switching, HIGH level for FM, LOW level for AM.
⑧	1/8~1/4	Frequency division switching terminal. 1/8 for HIGH level, 1/4 for LOW level. This set use 1/8 frequency division with HIGH level.
⑨	50 kHz	50 kHz shift pulse input terminals

Table-4

4. FM muting circuit

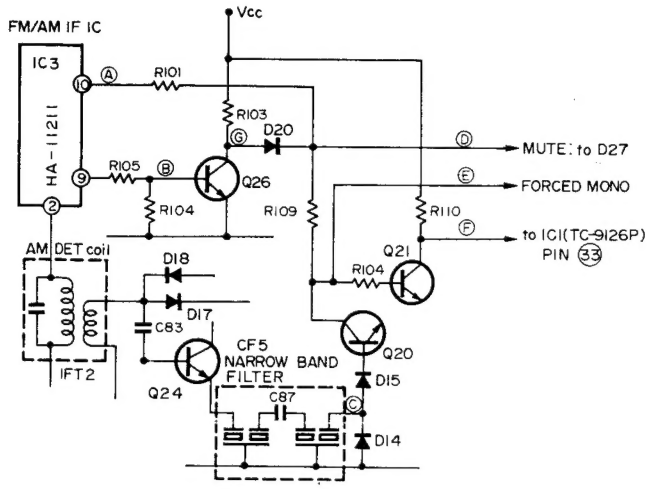


Fig. 11

This circuit consists of the MUTE switch part (muting the entire tuner output), formed by Q_{27} to Q_{30} with the two gates D_{27} and D_{28}, and the two drive circuits for this. In order to erase the pop noise generated at the time of controller [pin (35). After operation, a pulse of about 5 V is put out for several msec at this terminal, before the microcomputer operates.] to a pulse width of about 0.2 sec by Q_{22} and gives it as input to D_{28}. The other driver is obtained by the composite of the OR output of HA-11211 and the signal display output [IC3, pin (10), pin (9)].

When L_8 is adjusted correctly, output according to Fig. 16 is made to the OR output of HA-11211. This is 0 V in the range of ±45 to ±55 kHz of the correct tuning point, while it becomes 5 V outside of this range (in case of detuning or at the time of AM). This output is connected to point D via R101. On the other hand, voltage division is executed for the signal display output by R105 and R104, and this is applied to the base of Q_{26}, so that Q_{26} becomes ON above a certain input, and the potential of point G becomes LOW. This output is connected to point D via D20. Considering the potential of point D from the above, it can be seen that it becomes LOW only with a sufficiently strong input and correct tuning (this is insured by controller steps and quartz lock), while otherwise it becomes HIGH, so that muting between stations is obtained.

This figure applies for FM. At the time of AM, it is 5 V constantly.

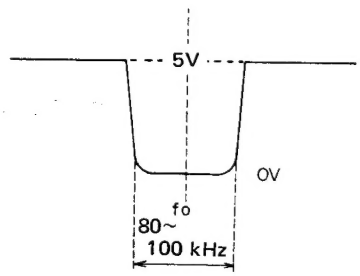


Fig. 12

5. Auto-stop circuit

5.1. FM auto-stop circuit

Controller scan stop is obtained by HIGH level for pin (37) of TC-9127P. These drive conditions are fulfilled completely by reversing the HIGH/LOW relation at point D for muting drive between stations. This means that the output F after reversal by Q_{21} is supplied to pin (37) of TC-9127P via a diode.

5.2. AM auto-stop circuit

The AM auto-stop drive signal is obtained by pick-up of 450 kHz from the secondary side of the DET. coil (L13), executing emitter follow by Q_{24}, passing it through a narrow band filter, and executing double voltage rectification. This output switches Q_{20} to ON and Q_{21} to OFF, at point F becomes HIGH level, and controller scan stop is executed in the same way as for FM by atuo-stop.

6. FM forced monaural circuit

This set has been designed for forced suppression of the MPX function with an ANT input level of 25 to 35 dB. This forced monaural function is obtained by a bias of 2 to 3 V at pin (16) of MPX IC, μPC-1161. As shown in Fig. 17, Q_{26} becomes OFF at I_{th} or less, and at point G becomes HIGH level. Voltage division is executed for this by R109, R104, and Q_{21}, and the signal at point E is obtained. This is supplied to pin (16) of μPC-1161.

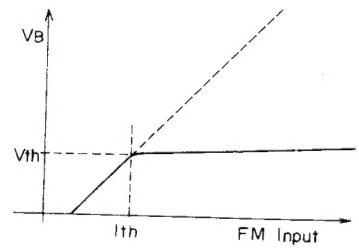


Fig. 13

7. Signal/power indicator circuit

7.1. Linear/logarithmic conversion circuit

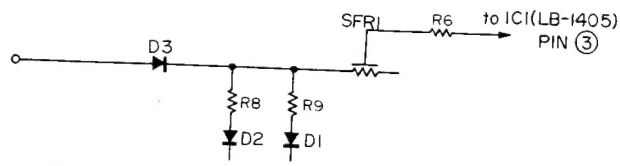


Fig. 14

The 5 point display IC (LB-1405) is used in cascade connection. As LB-1405 lights up linearily, it is not suited for output power display. This is converted to Log lighting by the circuit shown in Fig. 14.

D_2 and D_3 are germanium diodes for curve compensation for small signals, and D_1 is a silicon diode for curve compensation for large signals.

7.2. Signal/power switching circuit

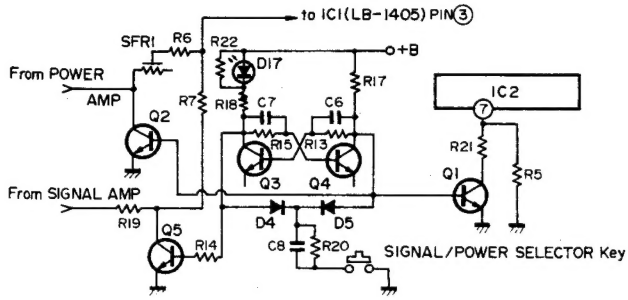


Fig. 15

D_{11} lights up at the time of signal display. When the power is switched on, the forward voltage of D_{11} is 2 to 3 V, so that Q_3 becomes ON quickly because of the voltage applied to the base of Q_3, and signal priority is obtained. By this, HIGH voltage from the collector of Q_4 is applied to the base of Q_2, the signal from the power amplifier is attenuated, and the signal is displayed.

When now the signal/power switching key is pushed, the flip-flop circuit is reversed, the collector potential of Q_3 becomes high, and Q_5 becomes ON. Thus the signal from the signal amplifier is attenuated and the power is displayed.

Q_1 is the switch circuit for shifting of the lighting level for prevention of erroneous operation from noise at the time of reception of an especially weak transmission.

7.3 BCD to 7-segment decoder

The TC-4511 BP is a decoder which converts the BCD code input into 7-segment display element drive signals, and it can directly drive the cathode-common LED.

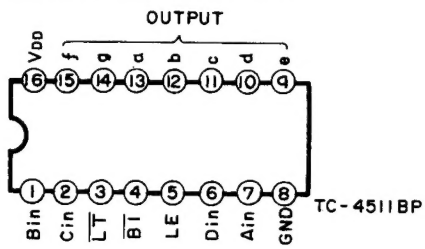


Fig. 16

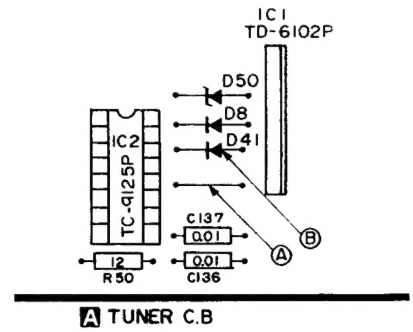
PIN NO	Symbol	Operation explanation
⑦	A IN	BCD Input
①	B IN	BCD Input
②	C IN	BCD Input
⑥	D IN	BCD Input
⑬	a	BCD Output a Segment
⑫	b	BCD Output b Segment
⑪	c	BCD Output c Segment
⑩	d	BCD Output d Segment
⑨	e	BCD Output e Segment
⑮	f	BCD Output f Segment
⑭	g	BCD Output g Segment

PIN NO	Symbol	Operation explanation
③	$\overline{LT}$	All the outputs light regardless of the BCD input with an "L" voltage.
④	$\overline{BI}$	All the outputs light regardless of the BCD input if $\overline{BI}$ is "1" when $\overline{LT}$ is an "H" voltage.
⑤	LE	It is possible to work the 4 BCD input wire latch and to give a static display with the "H" voltage (because of the latch).
⑧ ⑯	GND V_{DD}	Power supply voltage pin.

Table-5

8. FM IF circuit offset

The ceramic filters used with the AX-7800 (the SFE-10.7 MLH [H, G, K] or the SFE-10.7MMH [E]) are classified according to the color dots. If the PLL is not offset properly with respect to the center frequency, the auto-stop and muting will malfunction. When replacing the ceramic filters during repair, for instance, it is necessary to use all four units with the same color, and also to re-adjust the L8 and change the offset.



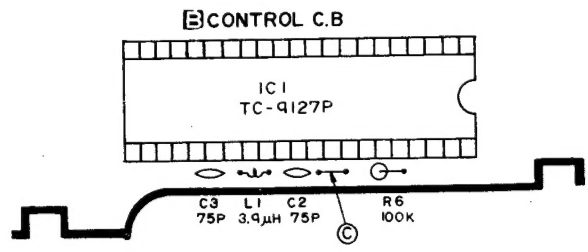


Fig. 17

CF color / Diode or Jumper	Black (10.650MHz)	Blue (10.675MHz)	Red (10.7MHz)	Orange (10.725MHz)	White (10.750MHz)
A	X	O	X	O	X
B	O	O	X	X	O
C	X	X	O	O	O

O : Connection, X : Cut

Table-6

9. AM band selector circuits = AX-7800E,K

Selection between FM, MW and LW is performed by electronic switches based on transistors. The circuits at the ANT side and LW side are displayed as below.
The MW and LW voltage is received from pins (10) and (9) of the controller IC.

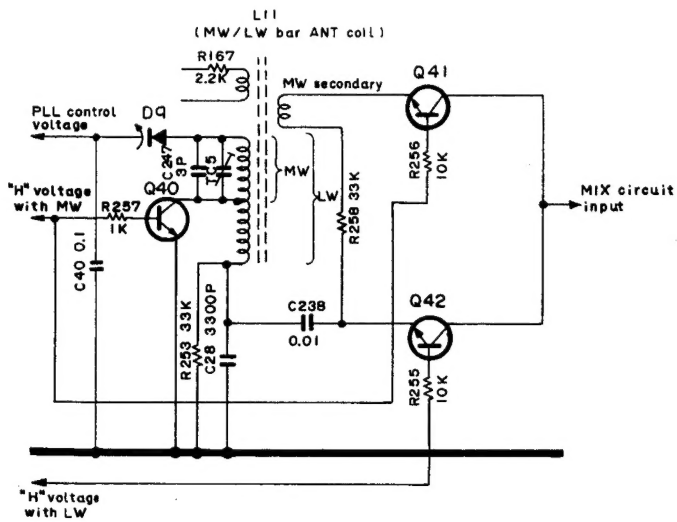


Fig. 18 Antenna side

9.1 MW oscillator

Since the potential at point [B] hardly falls at all when the voltage at point [A] is at "L" (because of the faint current flowing to the base), bias is applied to the Q17 transistor and the MW oscillator is activated.

9-2. LW oscillator

When the voltage at point [A] is "H", bias is applied to the LW transistor (Q37) and the LW oscillator is activated. By passing the collector current to Q37, the point [B] potential falls with the result that no bias is applied to the MW transistor (Q17) and the MW oscillator is not activated.

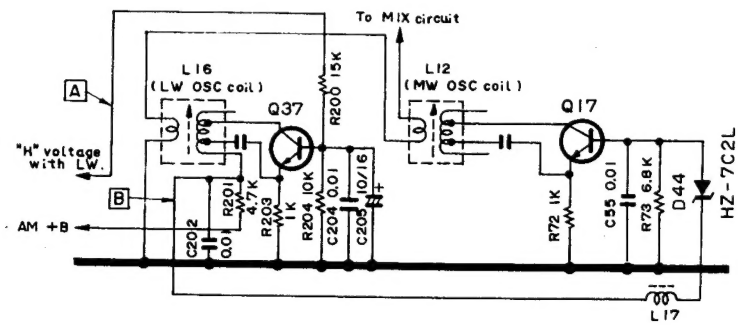
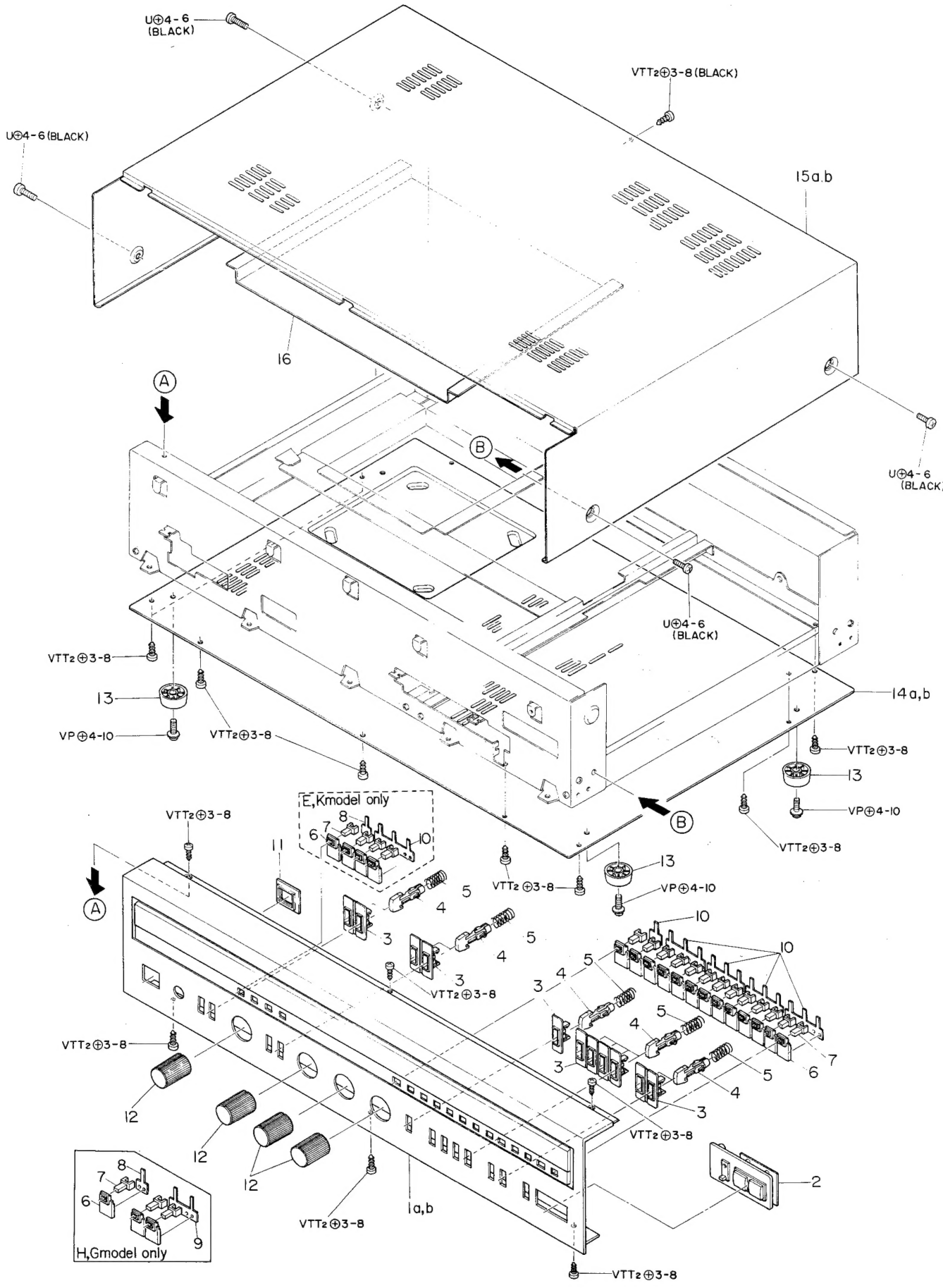


Fig. 19 Oscillator side

EXPLODED VIEW–1



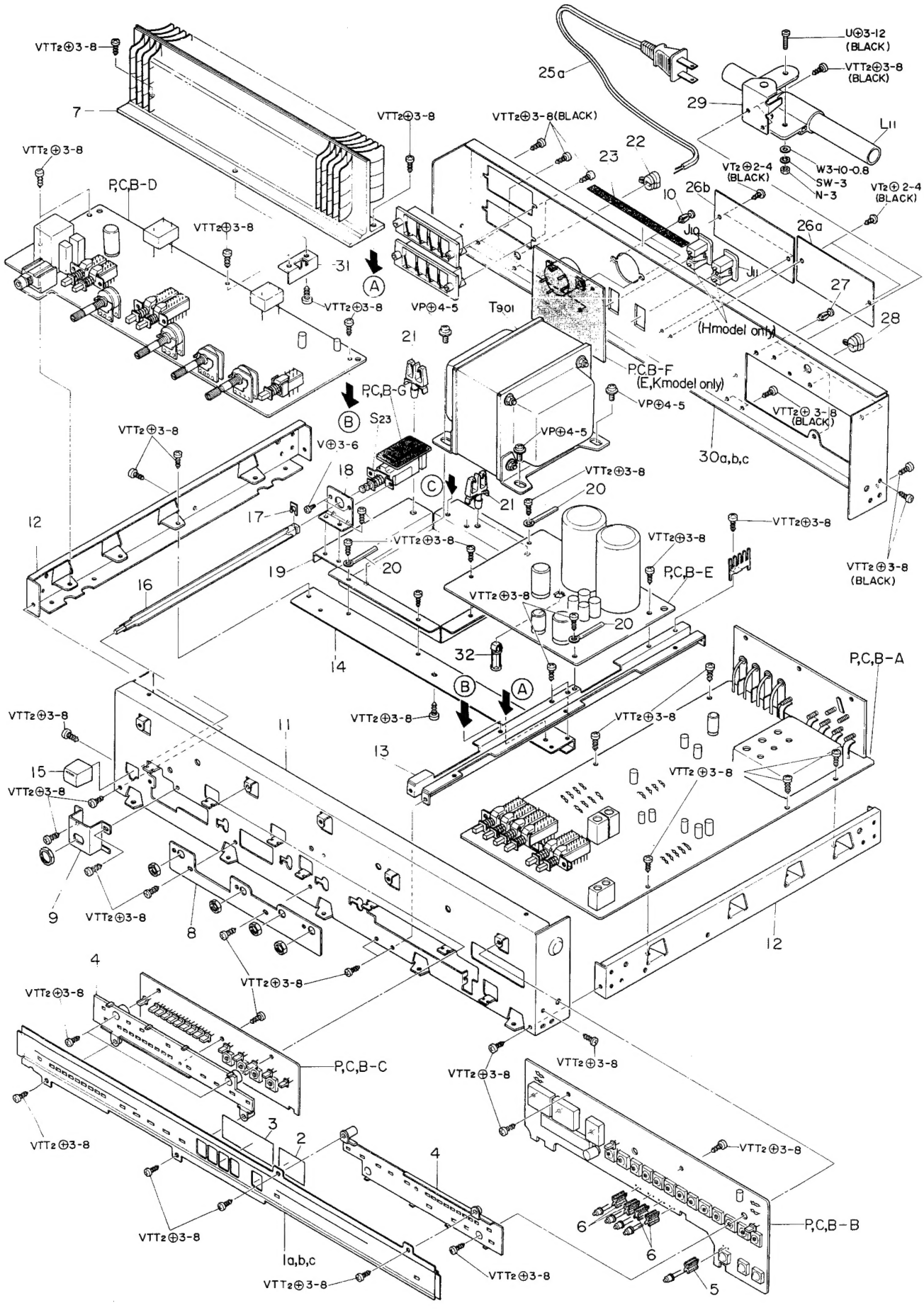
MECHANICAL PARTS

PARTS LIST

■ * mark in this part list shows exclusive part
- (Which is used) for only Model AX-7800.

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1-1a	09-047-168-01		Front panel ass'y (H, G model only)	*	1
1-1b	09-047-167-01		Front panel ass'y (E, K model only)	*	1
	82-742-001-01		Panel, Front (H, G model only)	*	1
	82-742-024-01		Panel, Front (E, K model only)	*	1
	82-742-036-01		Decorative plate, Front (H, G model only)	*	1
	82-742-023-01		Decorative plate, Front (E, K model only)	*	1
	82-742-005-01		Window, Dial		1
	87-261-071-21		V⊕2.6-4		3
1-2	09-047-163-01		Push button D ass'y		1
	82-742-213-01		Guide stopper	*	1
	82-742-217-01		P spring D	*	1
	82-742-009-01		Push button A	*	1
	82-742-218-01		C spring B	*	2
	82-742-013-01		Push button D	*	2
	82-742-014-01		Guide, Push button D	*	1
1-3	82-742-012-01		Guide, Pushbutton B	*	1
1-4	82-742-011-01		Push button B	*	11
1-5	82-742-211-01		C spring A	*	11
1-6	82-742-010-01		Guide, Push button A	*	1
1-7	82-742-009-01		Push button A	*	H,G:16 E,K:17
1-8	82-742-216-01		P spring C	*	2
1-9	82-742-215-01		P spring B (H, G model only)	*	1
1-10	82-742-214-01		P spring A		H,G:4 E,K:5
1-11	82-318-014-01		Guide, Power button		1
1-12	82-742-007-01		Knob, Volume	*	4
1-13	87-085-161-01		Foot		4
1-14a	82-742-206-01		Bottom plate (H model only)	*	1
1-14b	82-742-226-01		Bottom plate (E, K, G model only)	*	1
1-15a	82-742-003-01		Steel cabinet (H model only)	*	1
1-15b	82-742-034-01		Steel cabinet (E, K, G model only)	*	1
1-16	82-742-225-01		Plate, Poly carbonate	*	1

EXPLODED VIEW–2



Note: Handle the flat cable (iP, 12P), which connects the tuner circuit board to the control circuit board, carefully so that the exposed end at the tuner board side is not bent or broken.

1) When attaching to the jumper connector (at tuner circuit board side), insert and mount so that the metal exposed section is not bent.
If the flat cable is not mounted correctly, it will not work properly. Do not force the cable when detaching it.
When detaching the flat cable

(See Figure 1)

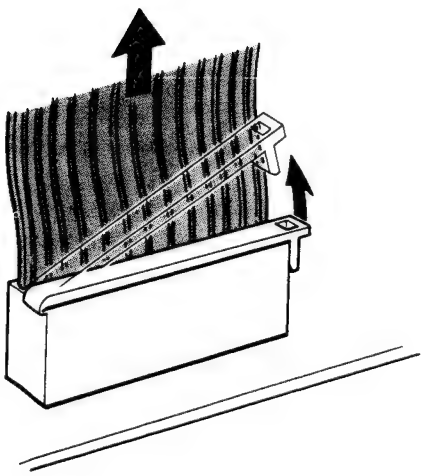


Fig. 1

When mounting the flat cable

(See Figure 2)

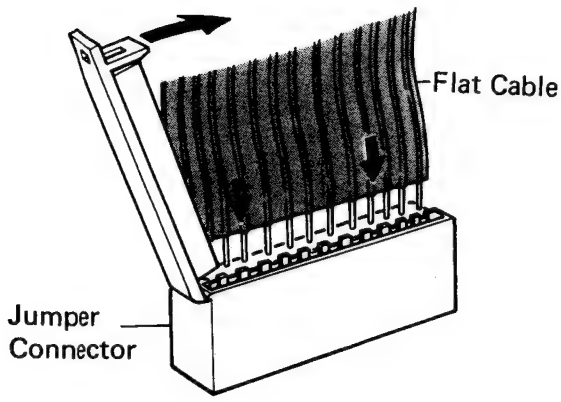


Fig. 2

2) If the end of the flat cable appears as in the figure below, it will not work properly.
When the end is bent

(See Figure 3)

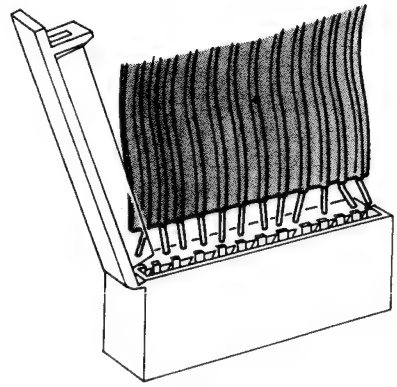


Fig. 3

When the end is broken

(See Figure 4)

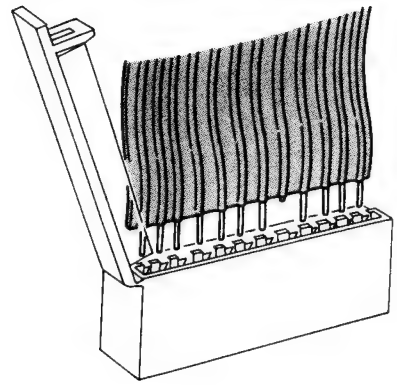


Fig. 4

3) If the end is broken, use a razor or similar tool, insert it into the break and strip the covered section as in the figure.

(See Figure 5)

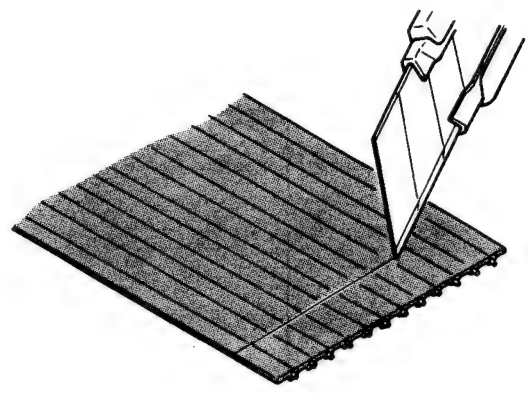


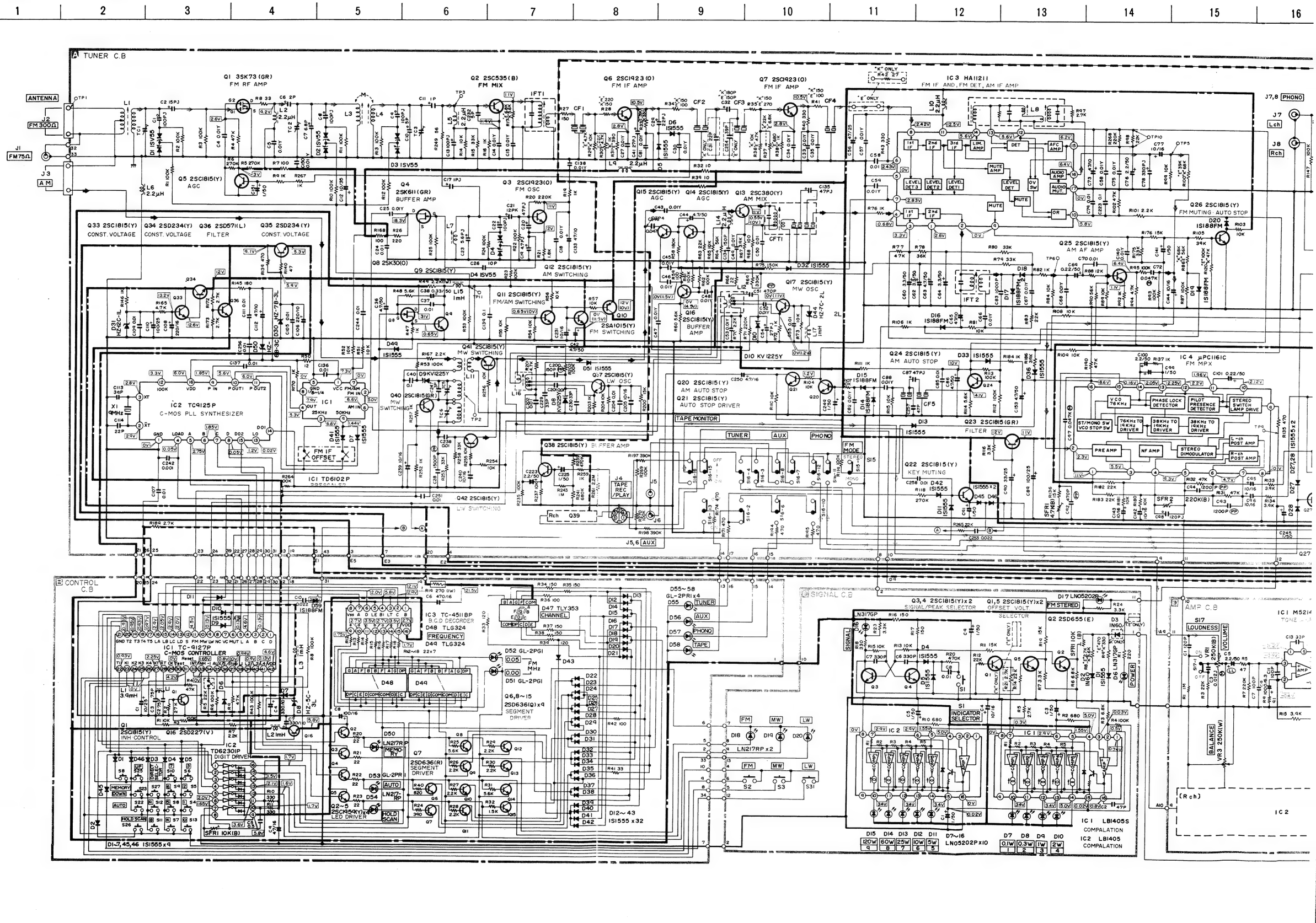
Fig. 5

ACCESSORIES/PACKAGE

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
1a	82-742-858-01		Printed indiv., Packing ass'y (H, G model only)	*	1
1b	82-742-860-01		Printed indiv., Packing (E, K model only)	*	1
2	82-742-853-01		Cushion, Antenna holder	*	1
3	87-051-135-11		Poly-vinyl sack (for AC power cord)		1
4	87-056-554-01		Poly-vinyl sack (for case)		1
5	87-056-564-01		Curl stopper		2
6a	82-742-904-01		Instructions booklet (H model only)	*	1
6b	82-742-902-01		Instructions bookelt (E model only)	*	1
6c	82-742-903-01		Instructions booklet (K model only)	*	1
6d	82-742-905-01		Instructions booklet (G model only)	*	1
7	87-056-608-01		Poly-vinyl sack		1
8	87-056-009-41		Distributors list		1
9	87-056-032-01		Guarantee card (G model only)		1
10a	87-043-025-01		FM antenna (H, G model only)		1
10b	87-043-046-01		FM antenna (E, K model only)		1
11	87-058-023-01		Binder, AC power cord		1
12	87-056-008-11		Label, AC power cord (K model only)		1
13	87-058-023-01		Cord binder		1

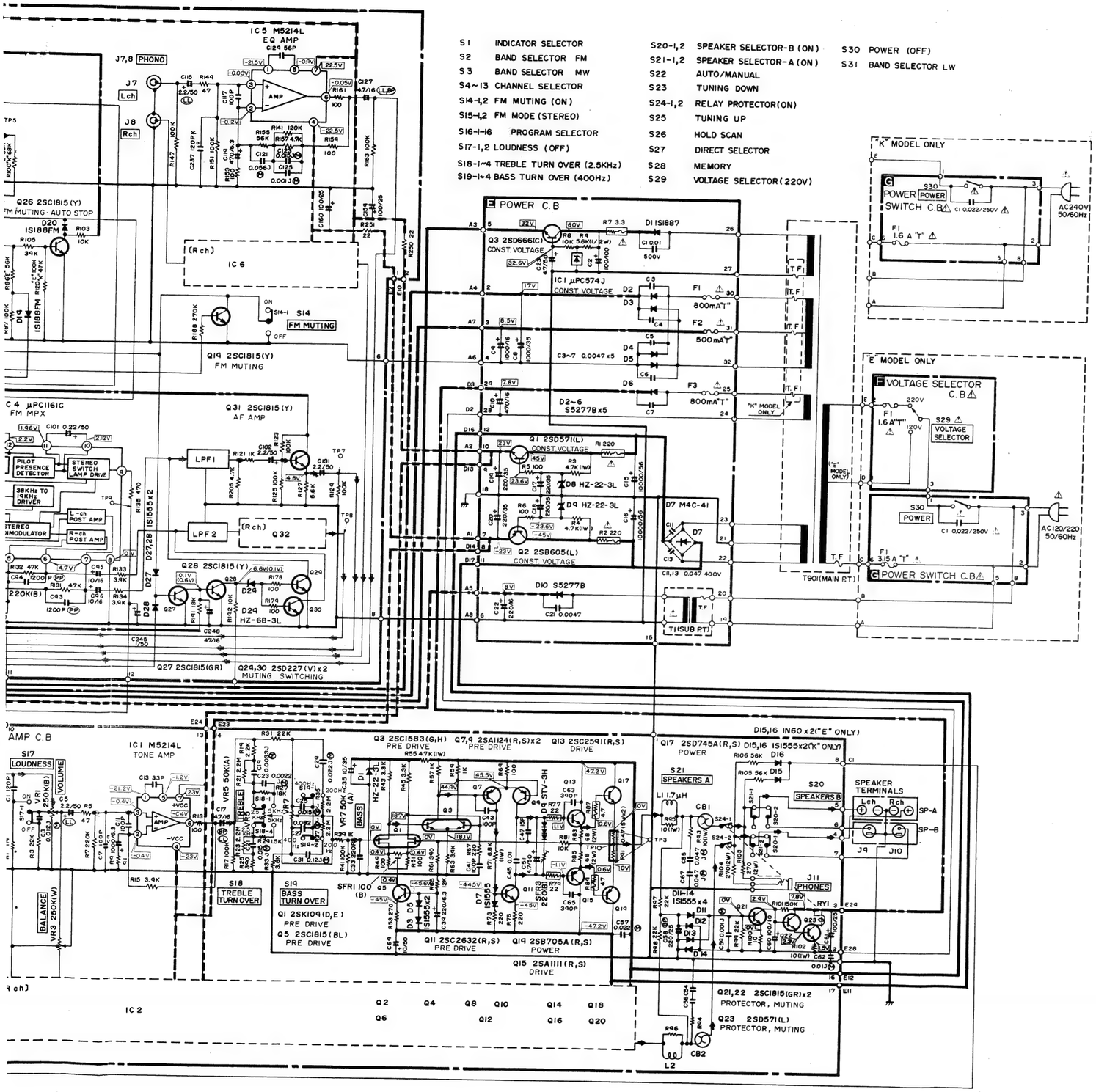
AIWA

SCHEMATIC DIAGRAM



15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

S1 INDICATOR SELECTOR
S2 BAND SELECTOR FM
S3 BAND SELECTOR MW
S4~13 CHANNEL SELECTOR
S14-1,2 FM MUTING (ON)
S15-1,2 FM MODE (STEREO)
S16-1~16 PROGRAM SELECTOR
S17-1,2 LOUDNESS (OFF)
S18-1~4 TREBLE TURN OVER (2.5KHz)
S19-1~4 BASS TURN OVER (400Hz)
S20-1,2 SPEAKER SELECTOR-B (ON)
S21-1,2 SPEAKER SELECTOR-A (ON)
S22 AUTO/MANUAL
S23 TUNING DOWN
S24-1,2 RELAY PROTECTOR(ON)
S25 TUNING UP
S26 HOLD SCAN
S27 DIRECT SELECTOR
S28 MEMORY
S29 VOLTAGE SELECTOR(220V)
S30 POWER (OFF)
S31 BAND SELECTOR LW

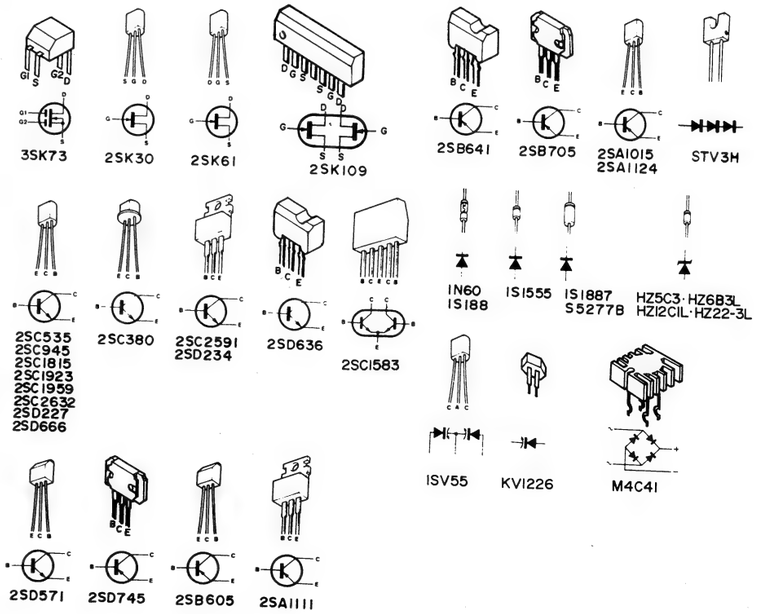


NOTES:

1) ■ B (+) power supply ■ B (—) power supply
2) ➡ Signal path
   ➡ AM signal path.
3) The voltage is the reference value measured with a tester (20 k-ohms/V DC) when there are no signals. But ( ) is with AM reception.
4) Resistors with no designation have a rated power of ¼W and a tolerance of ±5%.
5) Capacitors with no designation have a dielectric strength of less than 50WV.
6) The only capacitor tolerances indicated are ±5% (J) and +10% (K).
7) Ceramic capacitor symbols:
   - For temperature compensation (SL)
   - High dielectric constant system (YY)
   - High dielectric constant system (YW, YP, YZ)
8) Explanation of symbols
   - (M) Mylar capacitor
   - (A) Aluminum solid capacitor
   - (PP) Polypropylene film capacitor
   - (BP) Bi-polarized capacitor
   - (LL) Low-leakage capacitor
   - (T) Tantalum capacitor
   - Fuse resistor
   - Nonflammable resistor
   - Safety component symbol

⚠ This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

- This schematic diagram is subject to change without notice in the interests of improved performance.



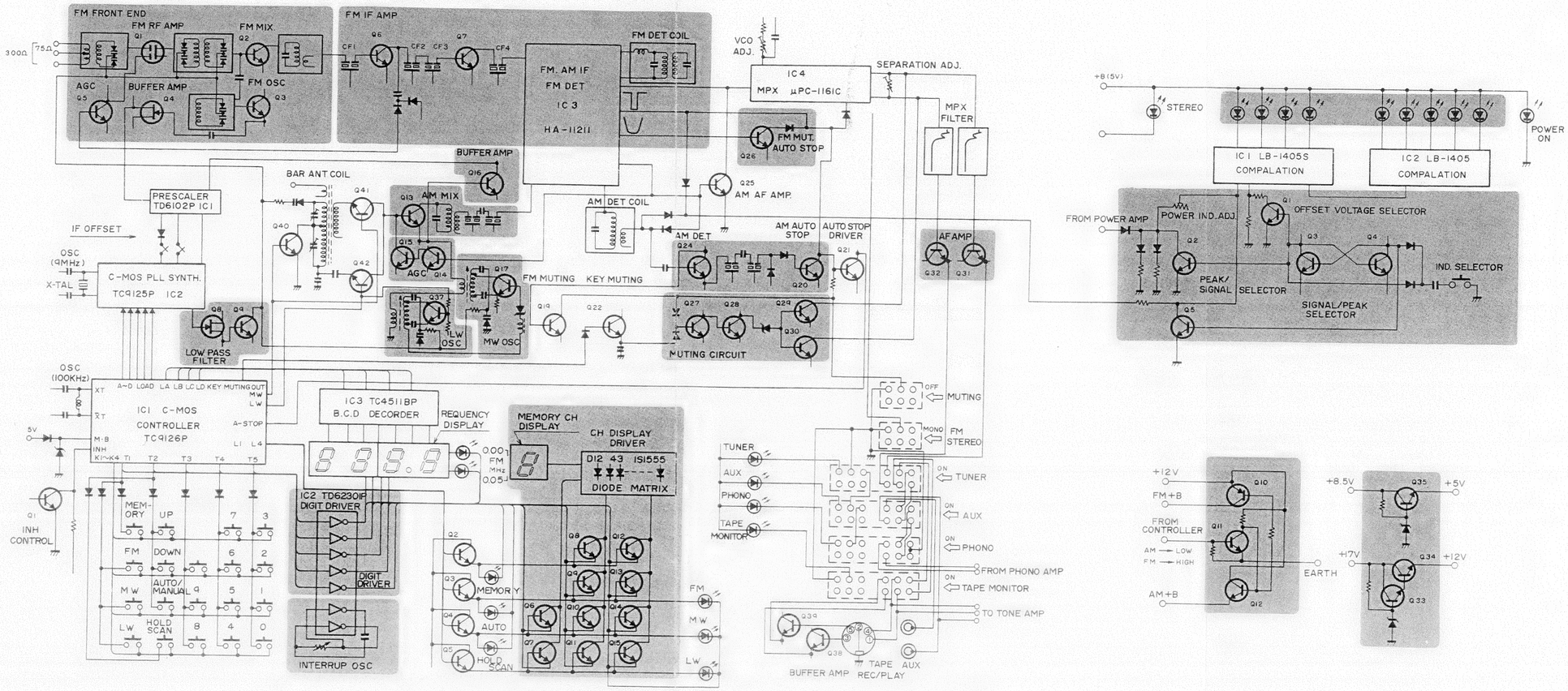
AX-7800E,K
AX-7800E,K

ELECTRICAL MAIN PARTS LIST

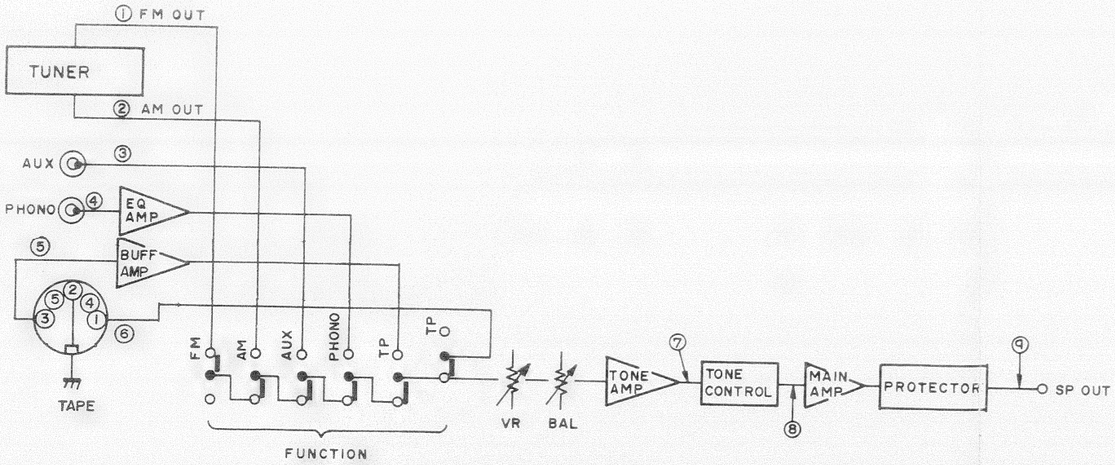
Symbol No.	Part No.	Description
≪TUNER CIRCUIT BOARD SECTION≫		
PCB-A	82-742-627-11	Tuner circuit board
IC1	87-027-546-01	IC, TD6102P
IC2	87-027-547-01	IC, TC9125P
IC3	82-494-791-01	IC, HA-11211
IC4	82-494-792-01	IC, μPC-1161C
IC5,6	87-027-446-01	IC, M5214L
Q1	87-026-165-01	FET, 3SK73 (GR)
Q2	89-305-352-01	Transistor, 2SC535 (B)
Q3,6,7	89-319-233-01	Transistor, 2SC1923 (O)
Q4	87-027-240-01	FET, 2SK61 (GR)
Q8	89-500-303-01	FET, 2SK30 (O)
Q10	89-110-154-01	Transistor, 2SA1015 (Y)
Q5,9,11,12, 14,15,16, 17,19,20, 21,22,24, 25,26,28, 31,32,33, 37,38,39, 41,42	89-318-154-01	Transistor, 2SC1815 (Y)
Q13	89-303-804-01	Transistor, 2SC380 (Y)
Q23,27,40	89-318-155-01	Transistor, 2SC1815 (GR)
Q29,30	89-402-275-01	Transistor, 2SD227 (V)
Q34,35	89-402-344-01	Transistor, 2SD234 (Y)
Q36	89-405-712-01	Transistor, 2SD571 (L)
D1~4	87-027-325-01	Diode, 1SV55
D5,6,7, 11,13,27, 28,32,33, 34,36,41, 42,45,46, 49, 51	87-027-097-01	Diode, 1S1555
D9,10	87-027-592-01	Diode, KV1225 (Y)
D29,50	87-027-552-01	Zener diode, HZ6B3L
D30	87-027-607-01	Zener diode, HZ7B3L
D14~20	88-052-188-11	Diode, 1S188 (FM)
D31	87-027-553-01	Zener diode, HZ12C1L
D44	87-027-606-01	Zener diode, HZ7C2L
L1	82-493-639-01	FM antenna coil
L5,6,14	87-005-101-01	FM choke coil, 2.2μH
L3	82-494-672-01	FM RF1 coil
L4	82-494-673-01	FM RF2 coil
L7	82-494-671-01	FM OSC coil
L8	82-742-641-01	FM coil (Quad)
L2,9,10	87-005-121-01	FM choke coil, 2.2μH
L12	82-742-642-01	MW OSC coil
L15,16	87-005-126-01	Coil, 1mH
L16	82-742-643-11	SW OSC coil
IFT1	82-494-674-01	FM IFT
IFT2	87-008-160-01	AM IFT (DET)
LPF1,2	82-497-635-01	Low-pass filter
CF1~4	87-008-200-01	Ceramic filter (E model only)
CF1~4	87-008-201-01	Ceramic filter (K model only)
CF5	87-008-203-01	Ceramic filter, SFZ450G
CFT1	87-008-202-01	Ceramic filter transformer
X1	82-742-676-01	Crystal, 9MHz
J1~8	82-742-639-01	Jack plate ass'y (ANTENNA, PHONO, AUX, TAPE) (E model only)
J1~8	82-742-640-01	Jack plate ass'y (ANTENNA, PHONO, AUX, TAPE) (K model only)
TC1~3	87-011-110-01	Trimmer, 5pF
TC5	87-011-108-01	Trimmer, 8pF
TC6	87-011-109-01	Trimmer, 15pF
SFR1	87-021-612-01	Semi-fixed resistor, 4.7kΩ-B
SFR2	87-021-617-01	Semi-fixed resistor, 220kΩ-B
S14,15,16	82-742-636-01	Push switch (FM MUTING, MODE, PROGRAM SELECTOR)
	87-032-968-01	Connector 8P
	82-032-972-01	Connector 12P
		< **Resistor** >
R49	82-473-707-01	2.2kΩ 1W Metal film
		< **Capacitors** >
C115,116	87-015-242-01	2.2μF 50V Electrolytic LL
C127,128	87-015-507-01	4.7μF 16V Electrolytic LL, BP
C200	87-014-037-01	150pF PP
C51,92	87-014-049-01	470pF PP
C93,94	87-014-059-01	1200pF PP
C28	87-014-061-01	1500pF PP
≪CONTROL CIRCUIT BOARD SECTION≫		
PCB-B	82-742-630-01	Control circuit board
IC1	87-027-591-01	IC, TC9127P
IC2	87-027-589-01	IC, TD62301P
IC3	87-027-590-01	IC, TC4511BP
Q1	89-318-154-01	Transistor, 2SC1815 (Y)
Q2,3,4,5	89-319-594-01	Transistor, 2SC1959 (Y)
Q6,8,9,10, 11,12,13,14, 15	89-406-363-01	Transistor, 2SD636 (Q)
Q7	89-406-362-01	Transistor, 2SD636 (R)
Q16	89-402-275-01	Transistor, 2SD227 (V)
D1~7, 9~43,45,46	87-027-097-01	Diode, 1S1555
D8	87-027-400-01	Zener diode, HZ5C3
D47	87-027-551-01	Light emitting diode, TLY353
D48,49	87-027-588-01	Light emitting diode, TLG324
D50,54	87-027-542-01	Light emitting diode, LN217RP
D51,52	87-027-512-01	Light emitting diode, GL-2PG1
D53,55,56, 57,58	87-027-377-01	Light emitting diode, GL-2PR1
D59	88-052-188-01	Diode, 1S188FM
L1	87-005-092-01	Coil, 3.9mH
L2	87-003-055-01	Coil, 1mH
L3	87-005-126-01	Coil, 1mH
S4~13,26,27, 28	86-992-604-01	Push switch (MEMORY 1~0, HOLD SCAN, DIRECT SELECTOR, MEMORY)
S22,23,25	87-031-498-01	Push switch (AUTO/MANUAL, TUNING DOWN, UP)
SFR1	87-021-567-01	Semi-fixed resistor, 10kΩ-B
		< **Resistor** >
R19	87-029-093-01	270Ω 1W Fuse resistor
≪SIGNAL CIRCUIT BOARD SECTION≫		
PCB-C	82-742-631-01	Signal circuit board
IC1	87-027-380-01	IC, LB-1405 (S)
IC2	87-027-261-01	IC, LB-1405
Q1,3,4,5	89-318-154-01	Transistor, 2SC1815 (Y)
Q2	89-406-555-01	Transistor, 2SD655 (E)
D1,4,5	87-027-097-01	Diode, 1S1555
D2	88-051-060-01	Diode, 1N60
D3	88-051-060-01	Diode, 1N60 (K model only)
D6,16	87-027-543-01	Light emitting diode, LN317GP
D7~15,17	87-027-544-01	Light emitting diode, LN05202P
D18,19,20	87-027-542-01	Light emitting diode, LN217RP
S1,2,3,31	86-992-604-01	Push switch (INDICATOR SELECTOR, FM, MW, LW)
SFR1	87-021-567-01	Semi-fixed resistor, 10kΩ-B
≪AMP CIRCUIT BOARD SECTION≫		
PCB-D	82-742-623-01	Amp circuit board
IC1,2	87-027-446-01	IC, M5214L
Q1,2	89-501-094-51	FET, 2SK109 (D,E)
Q3,4	89-315-835-61	Transistor, 2SC1583 (G,H)
Q5,6	89-318-156-01	Transistor, 2SC1815 (BL)
Q7,8,9,10	89-111-246-71	Transistor, 2SA1124 (R,S)
Q11,12	89-326-326-71	Transistor, 2SC2632 (R,S)
Q13,14	89-325-916-71	Transistor, 2SC2591 (R,S)
Q15,16	89-111-116-71	Transistor, 2SA1111 (R,S)
Q17,18	89-407-457-81	Transistor, 2SD745A (R,S)
Q19,20	89-207-057-81	Transistor, 2SB705A (R,S)
Q21,22	89-318-155-01	Transistor, 2SC1815 (GR)
Q23	89-405-712-01	Transistor, 2SD571 (L)
D1,2	87-027-329-01	Zener diode, HZ-22-3L
D3~8,11~14	87-027-097-01	Diode, 1S1555
D15,16	88-051-060-01	Diode, 1N60 (E model only)
D15,16	87-027-097-01	Diode, 1S1555 (K model only)
D9,10	82-473-611-01	Diode, STV-3H
L1,2	82-478-632-01	Coil, 1.7μH
RY1,S24	82-473-610-11	Relay
⚠ CB1,2	82-481-812-01	Circuit braker, 3.5A
J9	87-032-979-01	Jack, 6.3φ (PHONES)
VR1,2	82-742-644-01	Volume, 250kΩ-B (VOLUME)
VR3	82-742-645-01	Volume, 250kΩ-W (BALANCE)
VR5,6,7,8	82-742-646-01	Volume, 50kΩ-A,S (TREBLE, BASS)
SFR1,2	87-021-553-01	Semi-fixed resistor, 100Ω-B
SFR3,4	82-481-648-01	Semi-fixed resistor, 220Ω-B
S17	82-742-647-01	Push switch (LOUDNESS)
S18,19	82-742-649-01	Push switch (TURN OVER)
S20,21	82-742-648-01	Push switch (SPEAKER-A,B)
		< **Resistors** >
R93,94,95,96, 102	82-473-616-01	10Ω 1W Metal film
R55,56	82-473-706-01	4.7kΩ 1W Metal film
R71,72	87-025-188-01	6.8kΩ 1W Metal film
R83,84,85,86	87-025-085-01	68Ω 2W Metal film
R103,104	87-025-055-01	270Ω 2W Metal film
R91,92	87-025-232-01	0.47Ωx2 5W Cement resistor
⚠ R87,88,89,90	87-029-114-01	4.7Ω ¼W Fuse resistor
⚠ R77,78,79,80	87-029-090-01	22Ω ¼W Fuse resistor
		< **Capacitors** >
C5,6	87-015-242-01	2.2μF 50V Electrolytic LL
C58	87-015-450-01	220μF 25V Electrolytic BP
C17,18	87-015-507-01	4.7μF 16V Electrolytic BP,LL
≪POWER CIRCUIT BOARD SECTION≫		
⚠ PCB-E	82-742-626-01	Power circuit board
IC1	87-027-327-01	IC, μPC574J
Q1	89-405-712-01	Transistor, 2SD571 (L)
Q2	89-206-052-01	Transistor, 2SB605 (L)
Q3	89-406-663-01	Transistor, 2SD666 (C)
D1	87-027-324-01	Diode, 1S1887
D2,3,4,5 6,10	87-027-365-01	Diode, S5277B
D7	87-027-541-01	Diode, M4C41
D8,9	87-027-329-01	Zener diode, HZ-22-3L
⚠ T1	82-742-607-01	Power transformer (E model only)
⚠ T1	82-742-606-01	Power transformer (K model only)
⚠ F1,3	87-035-060-01	Fuse, "T" 800mA (E model only)
⚠ F1,3	87-035-221-01	Fuse, "T" 800mA (K model only)
⚠ F2	87-035-219-01	Fuse, "T" 500mA
	87-098-013-01	Fuse label, "T" 500mA
	87-033-147-01	Fuse clamp
		< **Resistors** >
⚠ R7	87-029-107-01	3.3Ω ¼W Fuse resistor
⚠ R1,2	87-029-109-01	220Ω ¼W Fuse resistor
R3,4	82-473-706-01	4.7kΩ 1W Metal film
		< **Capacitors** >
C15,16	82-742-679-01	1000μF 56V Electrolytic
C11,13	87-014-124-01	0.047μF 400V Electrolytic
≪VOLTAGE SELECTOR CIRCUIT BOARD SECTION≫ = E model only		
⚠ PCB-F	82-742-680-01	Voltage selector circuit board
⚠ S29	87-031-475-01	Rotary switch (VOLTAGE SELECTOR)
⚠ F1	87-035-068-01	Fuse, "T" 1, 6A
	87-032-744-01	Fuse clamp
≪POWER SWITCH CIRCUIT BOARD SECTION≫		
⚠ PCB-G	82-742-625-01	Power switch circuit board
⚠ S30	84-190-644-01	Push switch (POWER)
⚠ F1	87-035-119-01	Fuse, "T" 3.15A (E model only)
⚠ F1	87-035-224-01	Fuse, "T" 1.6A (K model only)
	87-098-018-01	Fuse label, "T" 1.6A (K model only)
	87-032-744-01	Fuse clamp
		< **Capacitor** >
⚠ C1	87-019-101-01	0.022μF 250V Line
≪MISCELLANEOUS≫		
⚠ T901	82-742-603-01	Power transformer (E model only)
⚠ T901	82-742-602-01	Power transformer (K model only)
⚠ L11	82-742-677-01	MW, LW bar antenna coil
⚠	87-034-877-01	AC power cord (E model only)
⚠	87-034-872-01	AC power cord (K model only)
J9,10	82-742-681-01	Speaker jack, 2P (SP-B)
	82-495-627-01	Speaker terminal, 4P (SP-A)

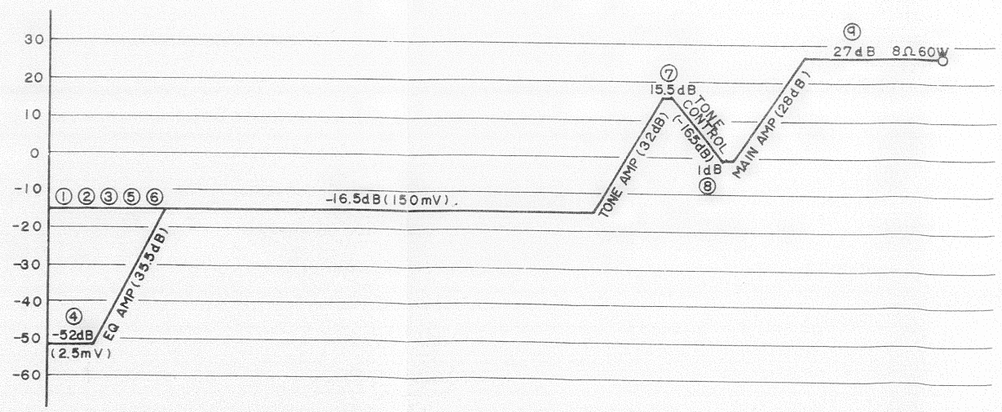
⚠ This symbol is given to important parts which serve to maintain the safety of the product, and which are made to conform to special safety specifications. Therefore, when replacing a component with this symbol, make absolutely sure that you use a designated part.

BLOCK DIAGRAM (TUNER SECTION)



LEVEL DIAGRAM (AUDIO SECTION)





1. FM IF Adjustment

Settings:
- BAND switch: FM
- MODE switch: MONO
- FM MUTING switch: OFF
- Input signal: No signal
- Test point: TP 7,8
- Adjustment location: IFT1

Method:
Adjust IFT1 so that the level is at its maximum.

3. FM tracking adj.
L1,3,4 ····· 87.50MHz
TC1, 2, 3 ····· 108.05MHz

9. MW freq. range adj.
L12 ····· 1611kHz (TP11 voltage 26.0V)
522kHz (TP11 voltage 2.6V)

8. AM IF Adjustment
IFT2, CFT1 ····· 450kHz

11. LW freq. range adj.
L16 ····· 150kHz (TP11 voltage 1.5V)

TP4 AM IF Input
TP5 FM DET Output
TP10 DC Zero Test Point
TP8 TUNER Output (R-ch)
TP7 TUNER Output (L-ch)
D AMP C.B
A TUNER C.B
J4 TAPE REC/PLAY
J5,6 AUX
J7,8 PHONO
GROUND
B32 B CONTROL C.B
J3 AM
ANTENNA
J2 FM 300Ω
J1 FM 75Ω
TP1 FM RF Input
TP2 AM RF Input
TP3 FM IF Input
TP11 Control Voltage Test Point
TP6 AM DET Output
TP9 19kHz Test Point
S16 PROGRAM SELECTOR
TAPE MONITOR
PHONO
AUX
TUNER
S15 FM MODE
S14 FM MUTING
SFR1
SFR2
LPF1
LPF2
L8
L11(MW,LW BAR ANTENNA COIL)
(PARALLEL CORD)
C CONTROL C.B

12. LW tracking adj.
L11 ····· 155kHz
TC6 ····· 353kHz

10. AM tracking adj.
L11 ····· 600kHz
TC5 ····· 1400kHz

2. FM freq. range adj.
L7 ··· 108.05 MHz (TP11 voltage 26.0V
87.50 MHz (TP11 voltage 2.6V

5. FM Distortion (MONO) Adj

Settings:
- BAND switch: FM
- MODE switch: MONO
- MUTING switch: OFF
- Input signal: 98.1 MHz, 60 dB
- Test point: TP7,8
- Adjustment location: L8, Ⓑ

Method:
Adjust L8 so that the dist reduce to minimum value.

Rating:
Less than 0.15%

4. DC Zero Adjustment

Settings:
- BAND switch: FM
- MODE switch: MONO
- MUTING switch: OFF
- Input signal: 98.1 MHz ± 5 kHz
- Test point: TP 10
- Adjustment location: L8, Ⓐ

Method:
Pointer of DC V.T.V.M. is right and left. Adjust L8 so tha "0" center. Other method input adjustment received to broadcas

7. FM Separation Adjustment

Settings:
- BAND switch: FM
- MODE switch: STEREO
- MUTING switch: OFF
- Input signal: 98.1 MHz, 60 dB
- Test point: TP7, TP8
- Adjustment location: SFR2

Method:
Adjust so that the separation at points is at its maximum.

6. FM 19 kHz Adjustment

Settings:
- BAND switch: FM
- MODE switch: STEREO
- MUTING switch: OFF
- Input signal: 98.1 MHz, 60 dB
Signal Generator M
- Test point: TP9
- Adjustment location: SFR1

Method:
Adjust so that the frequency at points is 19kHz.

NOTES (1) B(+) Pattern B(–) Pattern Others pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC) when the
But ( ) is with AM reception.

15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30

6. FM Distortion (MONO) Adjustment

Settings:
- BAND switch: FM
- MODE switch: MONO
- MUTING switch: OFF
- Input signal: 98.1 MHz, 60 dB
- Test point: TP7,8
- Adjustment location: L8, Ⓑ

Method:
Adjust L8 so that the distortion is reduce to minimum value.

Rating:
Less than 0.15%

5. DC Zero Adjustment

Settings:
- BAND switch: FM
- MODE switch: MONO
- MUTING switch: OFF
- Input signal: 98.1 MHz ± 5 kHz, 60 dB
- Test point: TP10
- Adjustment location: L8, Ⓐ

Method:
Pointer of DC V.T.V.M. is oscillated right and left. Adjust L8 so that pointer "0" center. Other method input signal of adjustment received to broadcast.

7. FM Separation Adjustment

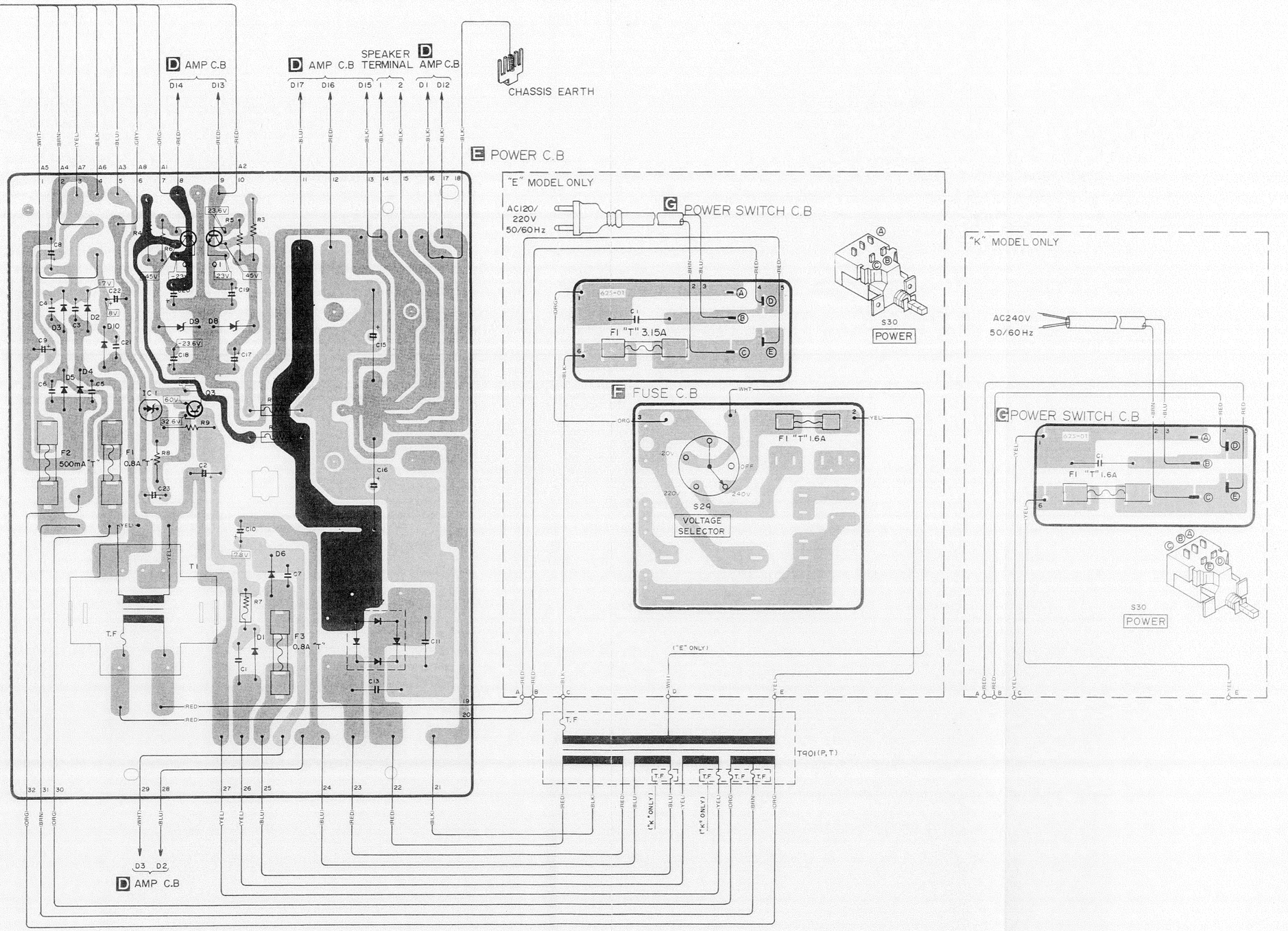
Settings:
- BAND switch: FM
- MODE switch: STEREO
- MUTING switch: OFF
- Input signal: 98.1 MHz, 60 dB
- Test point: TP7, TP8
- Adjustment location: SFR2

Method:
Adjust so that the separation at the test points is at its maximum.

FM 19 kHz Adjustment

Settings:
- BAND switch: FM
- MODE switch: STEREO
- MUTING switch: OFF
- Input signal: 98.1 MHz, 60 dB
  Signal Generator MOD.OFF
- Test point: TP9
- Adjustment location: SFR1

Method:
Adjust so that the frequency at the test points is 19kHz.



ttern
r (20 K ohms/V DC) when there are no signals.

WIRING–2

Interrupt Frequency Adjustment

Settings:
- Test point: TP12
- Adjustment location: SFR1

Method:
Adjust SFR1 so that the frequency is 250 Hz.

Rating:
250 ± 2 Hz

CMOS IC handling precautions

(1) The CMOS IC's construction makes this pa
to damage by static electricity and so t
care.
(2) Do not perform a continuity test with
Refer to the circuit voltages of each part.

3. SIGNAL/POWER Indicator Adjustment

Settings:
- Function switch: AUX
- BASS, TREBLE, BALANCE: Center
- LOUDNESS switch: OFF
- Output: 6.3 V (load 8 ohms)
- Adjustment location: SFR1
- Both channel driven

Method:
Adjust SFR1 so that 10W power indicator LED lights up when the output level is 6.3V.
Finally 10W power indicator LED put out when input signal decrease by 1 dB.

B CONTROL C.B

DIRECT CONT/ MEMORY STATION

S13 0 | S12 9 | S11 8 | S10 7 | S9 6 | S8 5 | S7 4 | S6 3 | S5 2 | S4 1 | D50 MEMORY | D47 CHANNEL | D51 0.00 / D52 0.05 FM MHz | D49 D48 FREQUENCY

D54 HOLD SCAN
S26 HOLD SCAN
S27 DIRECT SELECTOR
TUNING
S25 UP
S23 DOWN
D53 AUTO
S22 AUTO/ MANUAL
D55 TUNER
D56 AUX
D57 PHONO
D58 TAPE
S28 MEMORY
TP12 Interrupt Test Point
A TUNER C.B
E POWER C.B
D AMP C.B
A TUNER C.B
C SIGNAL C.B
("E" ONLY)
S1 INDICATOR SELECTOR
S31 LW
S3 MW
S2 FM
D6 POWER
D7 0.1W 1
D8 0.3W 2
D9 1W 3
D10 2W 4
D11 5W 5
D12 10W 6
D13 25W 7
D14 60W 8
D15 120W 9
D16 SIGNAL
D20 LW
D19 MW
D18 FM
D17 FM STEREO
S17 LOUDNESS
VR1,2 VOLUME
TP 2 DC Z
TLC-200B 82 742 631 01

NOTES (1) B(−) Pattern B(+) Pattern Component side pattern
(2) The voltage is the reference value measured with a tester (20 K ohms/V DC)

15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

lling precautions

C's construction makes this part susceptible
y static electricity and so take sufficient

orm a continuity test with a tester, etc.
ircuit voltages of each part.

1. Idling Current Adjustment

Settings:
- FUNCTION switch: AUX
- VOLUME: MIN.
- BASS, TREBLE, BALANCE: Center
- LOUDNESS switch: OFF
- Test point: TP3 (L-ch), TP4 (R-ch)
- Adjustment location: SFR3 (L-ch), SFR4 (R-ch)

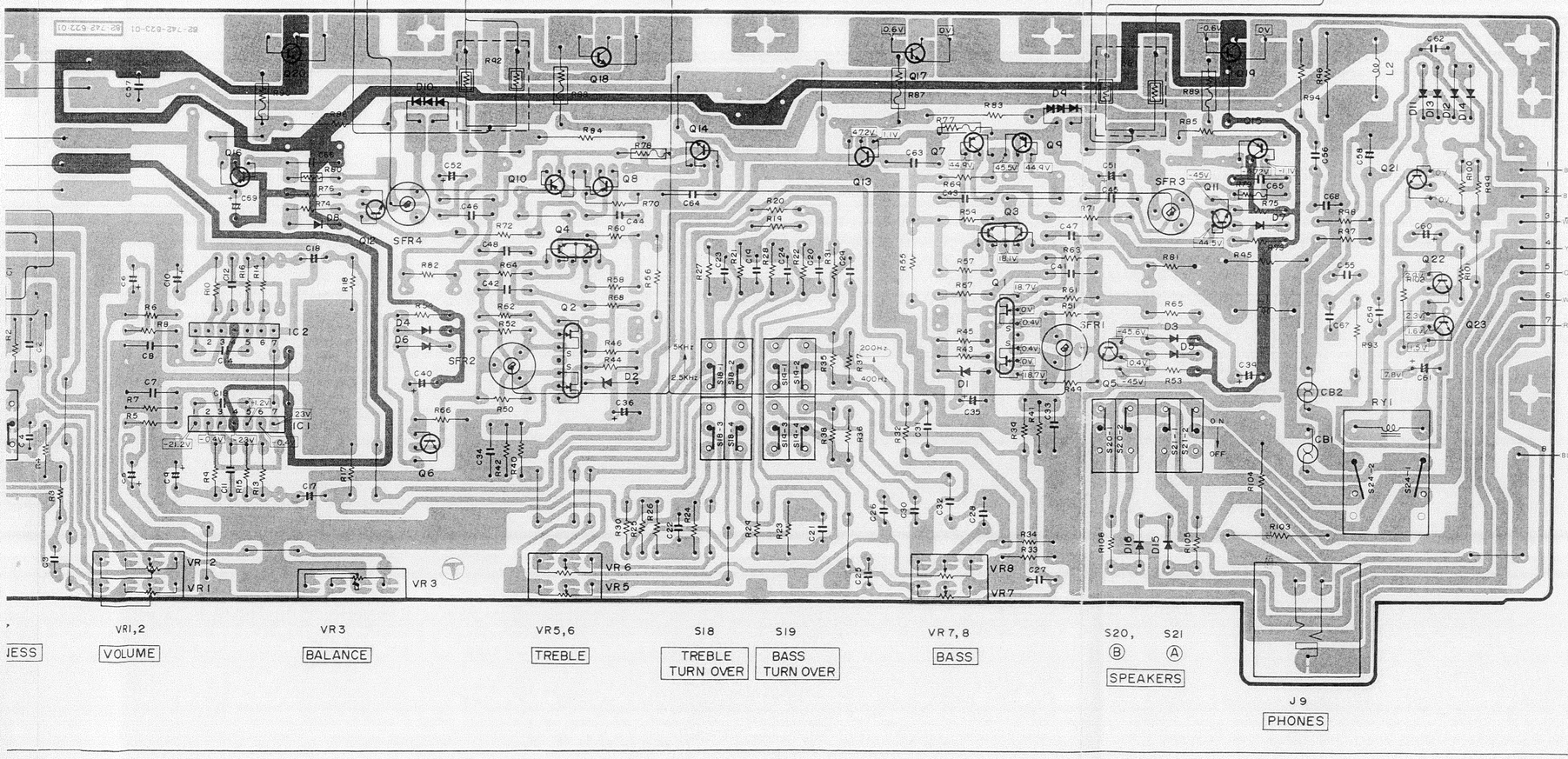
Method:
Connect a DC voltmeter across test points TP3,4.
Adjust SFR3,4 so that the level is 25 ± 10mV.
(26.6 ± 10.6mA)

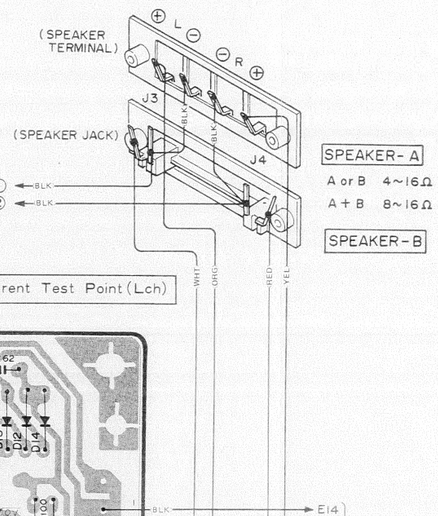
2. Zero potential (DC Balance) Adjustment

Settings:
- FUNCTION switch: AUX
- VOLUME: MIN.
- BASS, TREBLE, BALANCE: Center
- LOUDNESS switch: OFF
- Test point: TP1 (L-ch), TP2 (R-ch)
- Adjustment location: SFR1 (L-ch), SFR2 (R-ch)

Method:
Connect a DC voltmeter across test points TP1,2.
Adjust SFR1,2 so that the level is 0 ± 10 mV.

Rating:
Less than 0 ± 10 mV.





component side pattern Others pattern
a tester (20 K ohms/V DC) when there are no signals.

Ref. No.	Part No.	Part No. Changed to	Description	Common Model	Q'ty
2-1a	82-742-035-01		Back plate, Dial (H, G model only)	*	1
2-1b	82-742-018-01		Back plate, Dial (E model only)	*	1
2-1c	82-742-039-01		Back plate, Dial (K model only)	*	1
2-2	82-742-038-01		Sheet filter B	*	1
2-3	82-742-037-01		Sheet filter A	*	1
2-4	82-742-210-01		Guide, LED	*	2
2-5	82-742-222-01		Rubber cushion C	*	1
2-6	82-742-219-01		Rubber cushion	*	4
2-7	82-742-620-01		Heat sink A	*	1
2-8	82-742-212-01		Holder, Volume	*	1
2-9	82-742-208-01		Holder, Headphone	*	1
2-10	87-085-090-01		Nylon rivet (H, E model only)		2
2-11	82-742-201-01		Chassis, Front	*	1
2-12	82-742-203-01		Stay A	*	2
2-13	82-742-204-01		Stay B	*	1
2-14	82-742-205-01		Stay C	*	1
2-15	82-318-025-01		Push button, Power		1
2-16	82-385-382-01		Rod, P	AD-6300	1
2-17	82-385-383-01		Stopper, Rod	AD-6300	1
2-18	82-742-207-01		Holder switch	*	1
2-19	87-742-202-01		Holder, Transformer	*	1
2-20	87-038-039-01		Wire binder		3
2-21	87-064-051-01		Wire clip F		3
2-22	87-085-165-01		Cord bushing (H model only)		1
2-23	82-439-057-01		H washer A		1
2-24	87-058-166-01		Holder, AC power cord (E, K, G model only)		1
2-25a	87-034-826-01		AC power cord (H model only)		1
2-25b	87-034-877-01		AC power cord (E model only)		1
2-25c	87-034-872-01		AC power cord (K model only)		1
2-25d	87-034-892-01		AC power cord (G model only)		1
2-26a	82-742-029-01		Name plate, Spec. (H model only)	*	1
2-26b	82-742-026-01		Name plate, Spec. (E model only)	*	1
2-26c	82-742-027-01		Name palte, Spec. (K model only)	*	1
2-26d	82-742-028-01		Name plate, Spec. (G model only)	*	1
2-27	87-084-063-01		Nylon rivet 3-5.5		4
2-28	87-085-101-01		Cord bushing		1
2-29	82-473-010-01		Antenna holder ass'y		1
2-30a	82-742-033-01		Back panel (H model only)	*	1
2-30b	82-742-002-01		Back panel (G model only)	*	1
2-30c	82-742-025-01		Back panel (E, K model only)	*	1
2-31	82-742-209-01		Holder, Circuit board	*	1
2-32	87-064-096-01		PCB support		1